

**POLLUTANT LOADING ANALYSIS SITE SPECIFIC PROJECT PLAN FOR:  
Chocorua Village Safety Improvements Project  
Tamworth, NH  
Wetlands and Non-Site Specific Permit 2007-02666**

**Under the New Hampshire Section 319 Nonpoint Source Grant Program QAPP  
RFA# 08262  
October 17, 2008**

**Final Draft  
December 22, 2009**

*Prepared by:*  
**Fay, Spofford & Thorndike (FST)  
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FST Project Manager: \_\_\_\_\_  
Signature/Date  
(Kevin Gagne, P.E.)

FST Technical Project Manager/QA Officer: \_\_\_\_\_  
Signature/Date  
(David McNamara, P.E.)

NHDES Project Manager: \_\_\_\_\_  
Signature/Date  
Jillian E. McCarthy

NHDES Program QA Coordinator: \_\_\_\_\_  
Signature/Date  
Jillian E. McCarthy

NHDES Quality Assurance Manager: \_\_\_\_\_  
Signature/Date  
Vincent Perelli

USEPA Region I Project Manager \_\_\_\_\_  
Signature/Date  
Leah O'Neil

### 3- Distribution List

Table 1 lists people who will receive copies of the approved Site Specific Project Plan (SSPP) under the *New Hampshire Section 319 Nonpoint Source Grant Program Quality Assurance Project Plan* dated October 17, 2008.

**Table 1. SSPP Distribution List**

SSPP Recipient Name	Project Role	Organization	Telephone number and e-mail address
David McNamara, P.E.	Technical Project Manager	Fay, Spofford & Thorndike	603-669-2000 x239 dmcnamara@fstinc.com
Kevin Gagne, P.E.	Project Manager	Fay, Spofford & Thorndike	603-669-2000 x237 kgagne@fstinc.com
Jillian McCarthy	NHDES Project Manager	NHDES, Watershed Management Bureau	603-271-8475 <a href="mailto:jillianmccarthy@des.nh.gov">jillianmccarthy@des.nh.gov</a>
Jillian McCarthy	Program QA Coordinator	NHDES, Watershed Management Bureau	<a href="#">Same as above</a>
Vince Perelli	NHDES QA Manager	NHDES, Planning, Prev. & Assistance Unit	603-271-8989 <a href="mailto:vincent.perelli@des.nhg.gov">vincent.perelli@des.nhg.gov</a>

### 4- Project Organization

This project was a Municipally Managed Project, through the NHDOT's Transportation Enhancement Program. Fay, Spofford, and Thorndike (FST) was selected by the Town of Tamworth to develop construction plans and bid documents, and to oversee the construction of the project. FST's Project Manager, Kevin G. Gagne, P.E., maintained that role for the additional work associated with this grant. David E. McNamara, P.E., served as FST's Construction Phase Project Manager, and oversaw the construction of the bio-retention facility. He was responsible for ensuring the construction of the facility was in accordance with project plans and specifications.

Figure 1 outlines the organization structure of the project personnel.

**Figure 1. Project Organizational Chart**

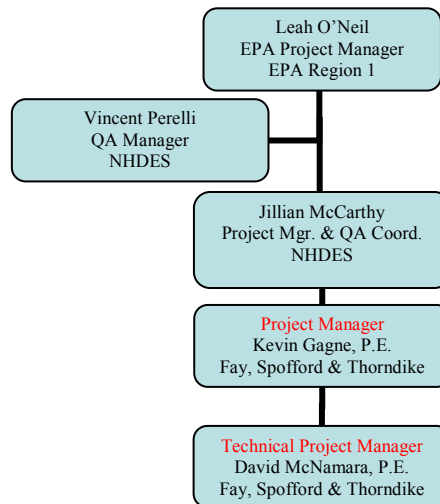


Table 2 identifies the roles and responsibilities of those individuals involved in the project.

**Table 2. Personnel Responsibilities and Qualifications**

<b>Name and Affiliation</b>	<b>Responsibilities</b>	<b>Qualifications</b>
Kevin Gagne	Project Manager	Registered Professional Engineer (MA), 13 years of experience in the field, including last 7 in NH.
David McNamara	Technical Project Manager Project QA/QC Officer	Registered NH Professional Engineer
N/A	Project Assistant	
Jillian McCarthy, NHDES, Watershed Management Bureau	Reviews QAPP preparation and other QA/QC activities	On file at NHDES
Jillian McCarthy, NHDES, Watershed Management Bureau	Reviews and oversees projects funded by DES 319 Restoration Grants in Merrimack basin.	On file at NHDES
Vince Perelli, NHDES Planning, Prevention & Assistance Unit	Reviews and approves QAPPs	On file at NHDES

## **5 -Site Information**

The project is located in the Chocorua Village area of Tamworth, NH and involved the reconstruction of NH Route 16, starting at its intersection with NH Route 113 and extending for approximately 800 feet north to improve both safety and stormwater management. Safety improvements included installation of sidewalks with curbing, crosswalks and lighting. Storm drainage, parallel parking and new street trees were also constructed. Additionally, a bio-retention stormwater treatment area for integration with a “pocket park” on Town-owned land in the northwest corner of the intersection of NH Routes 16 and 113 was also constructed. The project is located in the Saco River watershed adjacent to the Chocorua River and Mill Pond, extending for approximately 0.15 river miles and disturbed approximately 1 acre of land. Land use within the village area is mostly commercial, with an ice cream stand, real estate office, natural food store, service station/take-out food store and the US Post Office.

## **6-Project Rationale**

### **A. Problem Definition**

NH Route 16 is the only continuous north-south route to the east side of the White Mountains. Chocorua Village has high volumes of regular traffic, but is the site of much higher volume seasonal recreational traffic. NH Route 16 is the ‘Main Street’ of Chocorua Village, and hence there is a natural conflict between through traffic and local traffic, including pedestrian circulation within the Village. While NH Route 16 is posted at a speed of 30 mph, the typical design speed prior to construction was 50-60 mph through the Village. Both the real estate office and service station had a continuous opening driveway access of 200 feet to allow head-in parking, and patrons of the ice cream stand used the shoulders for parking and crossed the highway on foot. The

proposed improvements greatly enhance pedestrian safety and circulation through the village area.

Prior to construction, surface stormwater runoff carrying road sands, salts, oils and other related contaminants essentially ran untreated directly into the Chocorua River and Mill Pond. The University of New Hampshire's Stormwater Center 2005 Data Report indicates, "...nonpoint source pollution carried by stormwater runoff (is) the single greatest threat to water quality nationwide." The incorporation of bio-retention technology to this project has addressed untreated contaminants that are carried in stormwater runoff prior to discharge into the Chocorua River and Mill Pond within the project corridor. The bio-retention area treats a minimum of the first inch of runoff from the drainage area being directed to it.

## **B. Historical Data**

Prior to construction, the direct discharge caused significant erosion "troughs" in side-slope areas leading to river and pond edges. This erosion destabilized the already steep slopes, prevented the re-establishment of vegetation and increased the level of solids transported into the water bodies. The lack of BMPs resulted in the first flush of stormwater carrying accumulated roadway contaminants and sediments from nearby highway and parking areas directly into the surface waters. Previous studies of relevance have not been conducted within the project area.

## **7-Project Description and Schedule**

A pollutant loading analysis will be completed for this project in order to track the post-development improvements. The model will indicate changes in Total Suspended Solids, Total Phosphorous, and Total Nitrogen levels in the post-development condition. The addition of the bio-retention area to treat the first flush volume of water should reduce the pollutant concentrations. Prior to the improvements being constructed, runoff was able to sheet flow directly off the road and down to the Mill Pond and river area. It is now contained in a closed system, and directed through the bio-retention area prior to infiltrating through the ground and being released to the river.

## **8-Historical Data Information**

Existing water quality was not analyzed for this project. The goal of this project was to reduce the pollutant loads in the post-development condition. The incorporation of bio-retention technology to this project addressed untreated contaminants that are carried in stormwater runoff prior to discharge into the Chocorua River and Mill Pond within the project corridor.

## **9-Establishing Water Quality Goals**

Establishing numeric water quality goals was not a component of this project. The goal of this project was to reduce the pollutant loads in the post-development condition. A pollutant load reduction model, using NHDES's spreadsheet based on the Simple Method, will be prepared to determine the post-development loads with BMPs for Total Suspended Solids, Total Phosphorous and Total Nitrogen compared to the pre-development loads. The implementation of a proven, effective low-impact design BMP, such as bio-retention (where no treatment existed before), can only benefit water quality and aquatic habitat in the Chocorua River and Mill Pond.

## **10 – Loading Models**

A pollutant load reduction model, using NHDES's spreadsheet based on the Simple Method, will be prepared to estimate the current and future pollution sources and loadings. Numeric water quality goals have not been established for this project.

Tracey Tufts, P.E. of Fay, Spofford & Thorndike will prepare the pollutant load reduction model. She is a registered Professional Engineer in New Hampshire with over 15 years of experience in all aspects of highway, roadway and drainage design, including environmental permitting.

The Simple Method spreadsheet was developed by the NHDES Water Quality Section and is used for modeling the effectiveness of stormwater best management practices (BMPs) to determine changes in pollutant loading from pre-development to post-development. The data used to run the model was verified by NHDES as acceptable data.

## **11 -Final Products and Reporting**

Project Manager Kevin Gagne, P.E. of Fay, Spofford and Thorndike will submit the Final Report with Appendix on December 22, 2009.